

at existing freight rates—had been established. Yet postwar depression and high real interest rates delayed construction.

Coal carriage remained the main stimulus to new developments. Why this was so, especially when canals had generally achieved a high degree of diversification, requires further explanation. Was it because investment in passenger comfort was accorded too low a priority? Or did priorities simply reflect existing levels of effective demand?

Later booms in the economy produced major speculative investment: six out of twenty railway parliamentary acts in the years 1824 to 1826, for instance, related to Scottish projects. Capital tended to come more from those seeking income and gains than from those intent on reducing the operating costs of coal ventures; traffic diversification became a significant business objective; management grew more concerned with efficient and speedy operation. Robertson documents these changes superbly well and also deals in a more systematic fashion than earlier authors with difficulties afflicting railway enterprises.

Two chapters are allotted to railways built to connect towns and cities, a sector where Scotland notably lagged behind England. The urban network awaited the mania of the mid 1840s, with the obvious exception of the Edinburgh and Glasgow Railway. Native caution, competition for investment capital, inexperience in raising capital on the scale required, and a lower level of demand for transport services are all adduced to explain this lag. The removal of imperfections within the capital market and the creation of London and Lancashire financial connections are worthy of further exploration.

Although this book occasionally reiterates what was known already (notably the problems of engineers underestimating construction costs and of promoters over-optimistic about potential revenues and profits), its author deserves great credit for advancing our knowledge of Scottish railways before the mania. It will be indispensable to those interested in transport and business history, and one may hope it will also reach a wider readership.

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Essai sur la révolution industrielle en Belgique, 1770–1847. By Pierre Lebrun, Marinette Bruwier, Jan Dhondt, Georges Hansotte. *Histoire Quantitative et Développement de la Belgique*, Pierre Lebrun, ed., Tome II, vol. 1, La révolution industrielle, 2nd edition. Brussels: Académie Royale de Belgique, 1981.

Les débuts de la machine à vapeur dans l'industrie belge, 1800–1850. By Anne van Neck. *Histoire Quantitative et Développement de la Belgique*, Pierre Lebrun, ed., Tome II, Vol. 2, La révolution industrielle. Brussels: Académie Royale de Belgique, 1979.

La métallurgie et le commerce international du fer dans les Pays-Bas autrichiens et la Principauté de Liège pendant la seconde moitié du XVIII^e siècle. By Georges Hansotte. *Histoire Quantitative et Développement de la Belgique*, Pierre Lebrun, ed., Tome II, Vol. 3, La révolution industrielle. Brussels: Académie Royale de Belgique, 1980.

Le commerce extérieur de la Belgique, 1830–1913–1939: Présentation critique des données statistiques. By D. Degreëve. *Histoire Quantitative et Développement de la Belgique*, Pierre Lebrun, ed. Tome V, vol. 1a and b, Les relations internationales belges 1830–1913. Brussels: Académie Royale de Belgique, 1982.

Le pouvoir central belge et ses comptes économiques, 1830–1913. By Joseph Pirard. *Histoire Quantitative et Développement de la Belgique*, Pierre Lebrun, ed. Tome VI, vol. 1a, L'état et les finances publiques belges. Brussels: Académie Royale de Belgique, 1980.

The Quantitative History and Development of Belgium is a project initiated in the 1960s by Pierre Lebrun, of the Universities of Liège and Namur. A principal disciple of Kuznets, Lebrun was also obviously inspired by Jan Marczewski and Tihomir Markovitch in their *Quantitative History of the French Economy*. The Belgian (mostly Walloon) project, however, is more ambitious than the French. Its announced aim is not merely to confine itself to economic history:

we shall attempt to reconstitute the successive modes of operation of a certain social system at first, and then its overall development. What is at stake—hence the fascinating character of this enterprise—is finding out whether, starting from the relatively simple case presented by the Belgian system between 1830 and 1914, it is possible scientifically to construct an “irreversible” model which would account for the “trajectory” of a given social system during a long period, so that individual disturbances, even with cumulative effects, could be considered as converging—no longer converging toward some equilibrium stasis, but in relation to a future conceived as a succession of structures and “passages” (part 2, vol. 1, pp. 8–9).

The first series, covering the period 1830–1913 is planned for ten parts, and “each part is divided into as many volumes as is necessary.” Part 1 will be a broad introduction, Part 3 will deal with population (1830–1913), Part 4 with the physical product of the economy, Part 7 with money and credit, Part 8 with transportation, Part 9 with G.N.P., and Part 10 seems to be an overall conclusion and balance sheet. A second and third series are announced, and they will cover the rest of the twentieth century. The following volumes have been published so far:

Part 2, Volume 1 is an essay on the industrial revolution in Belgium, 1770–1847. This publication, now in its second, revised edition, follows a regional framework. The late Jan Dhondt contributes an outstanding analytical chapter on industry in the area of Ghent, describing the origins of its modern cotton industry in the rural manufacture of linens and the cotton printing workshops. Dhondt is able to identify the individual merchants who became the manufacturers and to describe their social origins. He also discusses at length the sources of investment funds. Lebrun follows with a parallel chapter on the woolen industry of Verviers, on which he has been an authority for many years. Thorough descriptive chapters on the metallurgical and coal-mining industries around Liège, and on the mining industry of Mons, the Borinage, and the area of Charleroi are contributed by Georges Hansotte (State Archives in Liège and University of Namur) and Marinette Bruwier (University of Mons). Then Lebrun comes back with an entirely original discussion of the economic role Brussels played. This focus gives him an opportunity to describe the part of the government, of the railroads, and of the major banks in the industrialization of Belgium after its independence in 1831. Lebrun also introduces and concludes the volume. Although some of his analyses seem rather metaphysical, perhaps the further discussions announced for a forthcoming volume will include clarifications.

Part 2, Volume 2 is a 900–page tome on the introduction of the steam engine in Belgian industry, 1800–1850, by the late Anne van Neck (University of Brussels). The book confines itself to stationary steam engines, but it is encyclopedic. It begins with a chronological survey of the introduction of steam and continues with a detailed description of the Newcomen and Watt engines and their construction, a survey of the different Belgian manufacturers, and a price study. Van Neck then examines the use of steam engines in relation to the growth of the various sectors. The book closes with a review of the cost of engines, their financing, and finally a comparative evaluation of the stock of steam engines in the western European context.

In Part 2, Volume 3, Georges Hansotte deals with the metallurgical industry of Belgium during the second half of the eighteenth century. The book begins as a technical treatise, continues as a geographic survey and a survey of customs policies, and concludes as an enumeration, commodity by commodity, region by region, of imports and exports.

Part 5, Volumes 1a and 1b, by D. Degrevé, is a tabulation (with graphical presentation) of annual exports and imports by volumes and values for 172 commodities, 1835 to 1939, preceded by a detailed description and critique of the statistical sources, including a discussion of the organization of the customs administration.

In Part 6, Volume 1a, Joseph Pirard (Société Générale de Belgique) presents the first installment of a two-volume tabulation of government receipts and expenditures, 1832–1912, along the lines of the national accounting model.

We should hope that budget cuts in Belgium will not cause this massive project to end abruptly. In the meantime, what is available here is on the one hand the starting point of a data base for future quantitative work, and on the other, a collection of fundamental encyclopedic volumes on some of the leading sectors and regions of the Belgian industrial revolution.

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Lange Wellen wirtschaftlichen Wachstums in der Schweiz, 1814–1913: Eine Untersuchung der Hochbauinvestitionen und ihrer Bestimmungsgründe. By Bernhard Beck. Bern: Paul Haupt, 1983. Pp. 175. DM 46.

This book, written in German, is about long cycles in economic growth in Switzerland between 1814 and 1913. The author measures economic development by looking at the evolution of the stock of buildings over time. The first chapter deals with the measurement of investment in new buildings and the corresponding capital stock. An impressive amount of data for various cantons in Switzerland is presented and described. Chapter 2 evaluates the cyclical behavior of the data series, mainly by using time series plots and concentrating on turning points. The author distinguishes different types of cycles with respect to length and timing. More advanced statistical methods would have been useful in this context in order to investigate how similar the cycles are and whether they contain a forecastable momentum.

In chapters 3 to 8 the author attempts to explain the observed movements in the stock of buildings and its rate of change. In terms of explanatory variables, he correctly concentrates on the demand side of the market by looking at real activity, the number of households, and investment activity in general. The magnitudes just mentioned are considered to be of variable importance over time and space. The empirical methodology consists in visual comparison of various time series graphs.

The most attractive feature of Beck's research is certainly the collection of important data during the period when Switzerland developed into an industrialized state. The interpretation of these observations is, however, not very convincing. The explanatory variables mentioned above are essentially also indicators of economic development. The exception is real exports, which certainly are exogenous to real activity in a small country like Switzerland. It is therefore almost obvious that the series considered will be positively correlated with the stock of buildings in an economy. Furthermore, the graphic method used makes it very difficult if not impossible to disentangle the relative importance of the various contributing factors. It also remains unclear why the explanation of the cyclical variation in the building sector is significantly dependent on the time period and the geographical area considered. I am, however, not in a position to judge whether a more ambitious treatment of the data would have been feasible.

In conclusion, the book is an important source of data for students of Swiss economic history but falls somewhat short of expectations in terms of interpretation and explanation.

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